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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,158	07/23/2003	Douglas H. Werner	057971-5005	7993

7590 08/23/2005

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EXAMINER

ALEMU, EPHREM

ART UNIT PAPER NUMBER

2821

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/625,158	<b>Applicant(s)</b> WERNER ET AL.	
	<b>Examiner</b> Ephrem Alemu	<b>Art Unit</b> 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 6 is/are allowed.
- 6) ☒ Claim(s) 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 5 is rejected under 35 U.S.C. 102(e) as being anticipated by Werner et al. (US Pub. 2003/0034918).

Re claim 5, Werner discloses a method for rapid radiation pattern formation of a fractile array (i.e., fractal array), comprising the steps of:

a) employing a pattern multiplication for fractile array (i.e., fractal arrays) (Figs. 1-47) comprising:

deriving a product formulation for the radiation pattern of a fractile array (i.e., fractal arrays) for a desired stage of growth (Figs. 1, 2, 45; Page 3, paragraphs [0047] – [0049] & [0078] - [0081]);

b) recursively applying step (a) to construct higher order fractile arrays (i.e., fractal arrays) (Figs. 1, 2, 45; paragraphs [0049] & [0078] - [0081]); and

c) forming an antenna array based on the results of step (b) (Figs. 1, 2, 45; [0050] and [0078] to [0083]).

### *Allowable Subject Matter*

3. Claims 1-4 and 6 are allowed.

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4. The following is an examiner's statement of reasons for allowance: The prior art of record fail to teach or suggest, alone or in combination, the following limitations: "a fractile array having a plurality of antenna elements uniformly distributed along a Peano-Gosper curve" as claimed in claim 1; "tiling a plane with a plurality of non-uniform shaped unit cells of an antenna array; optimizing the non-uniform shape of the unit cells; and optimizing the tiling of said unit cells" as claimed in claim 3; and a method for rapid radiation pattern formation of a **Peano-Gosper fractile array**, including the limitation "a) employing a pattern multiplication for fractile arrays, comprising: deriving a product formulation for the radiation pattern of a fractile array for a desired stage of growth" as claimed in claim 6. It is for these reasons in combination with all the other limitations in the independent claims 1, 3 and 6, that claims 1-4 and 6 are allowed.

*Response to Arguments*

5. In response to applicant argument that Werner et al. (US Pub. 2003/0034918) does not disclose an array of many antenna elements as claimed in claim 5 is respectfully disagreed.

Werner discloses a method for rapid radiation pattern formation of a fractile array (i.e., fractal array), comprising the steps of: a) employing a pattern multiplication for fractile array (i.e., fractal arrays) (Figs. 1-47) comprising: deriving a product formulation for the radiation pattern of a fractile array (i.e., fractal arrays) for a desired stage of growth (Figs. 1, 2, 45; Page 3, paragraphs [0047] –[0049] & [0078] - [0081]); b) recursively applying step (a) to construct higher order fractile arrays (i.e., fractal arrays) (Figs. 1, 2, 45; paragraphs [0049] & [0078] - [0081]); and c) forming an antenna array based on the results of step (b) (Figs. 1, 2, 45; paragraphs [0050] and [0078] to [0083]).

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Werner discusses the generation of either an antenna elements within an antenna or antennas within an array of antennas. In addition in paragraph [0090], Werner teaches that the invention may be applied to any combination of antennas, antenna arrays, and/or frequency selective surface(s) which may be planar or non-planar. Therefore, Werner not only discloses a single antenna (Fig. 46) but also discloses an array of many antenna elements (Fig. 47).

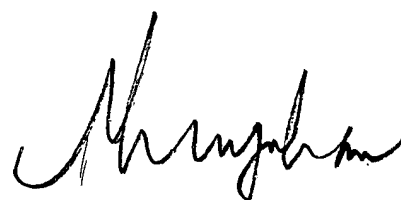
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ephrem Alemu whose telephone number is (571) 272-1818. The examiner can normally be reached on M-F Flex hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K. Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EA  
8-18-05



**THUY V. TRAN  
PRIMARY EXAMINER**